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ABSTRACT

The purpose of this bibliography is to give coaches a better understanding of what determines competitive stress in athletes and of how this anxiety relates to performance. Research and studies pertaining to factors related to pregame and postgame competitive stress were investigated as well as the validity and reliability of tests used to measure competitive stress in athletes. The annotations are divided into three categories: (1) factors or sources that determine pregame and postgame competitive stress in athletes; (2) the effect of stress on an athletic performance; and (3) the validity of tests used to measure competitive anxiety. (JD)

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COMPETITIVE STRESS IN ATHLETES: DETERMINANTS AND IMPACT ON PERFORMANCE

EXIT PROJECT

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INTRODUCTION

Stress came into play in many human experiences, and the sports realm was no exception. Most athletes who participated in competitive sports wanted to perform well and receive favorable evaluations of their athletic ability. Athletic achievement and prowess was a prize in which most competitors value, seek, and strive to obtain. However, not every athlete was going to receive positive feedback for their athletic endeavor; rather, some were going to encounter negative information and unfavorable evaluations about their athletic ability. When a sports competitor met with these negative evaluations, he/she felt a threat to self-esteem. Thus, stress ensued.

Competitive stress was the negative emotion or anxiety that an athlete experienced when he/she perceived the competition to be personally threatening. (Passer and Scanlan 1981:144). Stress was triggered when the participant perceived that he/she was capable of meeting competitive demands successfully and therefore anticipated negative consequences. (Lewthwaite and Scanlan 1984:209). Hence, stress could occur at any point during competition when an athlete perceived this demand/performance discrepancy. This could include times prior to competition if the athlete anticipated an inadequate performance; during competition if the athlete perceived the ongoing performance to be inadequate and because of this perception anticipated further failure; or after competition if the completed performance was interpreted as inadequate. (Passer and Scanlan 1981:145). Clearly, not all athletes experienced competitive stress, and not all competitive circumstances induced stress. (Passer and Scanlan 1979:152). Therefore, it was imperative to identify the sources that contributed to this negative emotion, labeled competitive stress, in order to make sports competition a more positive experience for <u>every</u> participant.

Should all competitive stress be eliminated from sports? Was the competitive stress that athletes experienced all negative and detrimental to performance or did they need certain amounts of stress to enhance their performance? What degree of stress constituted an optimum performance? A competitor's anxiety at the time of performance may be a powerful determinant of performance. (Cooley 1987:767). The relationship of stress and athletic performance was examined to lend some insight to athletes as well as coaches. An understanding of this relationship would help future sports participants in their athletic endeavors.

STATEMENT OF THE PROBLEM

An understanding of the determinants of competitive anxiety would provide valuable information for both anxiety reduction and performance enhancement interventions. (Cooley 1987:767). Participation in an organized sport has assumed an increasingly important role in the development of children and adolscents. (Brustad and Weiss 1987:97). To millions of these sports participants, a competitive sport was a major arena for achievement; but to some of these participants, competition was stressful. (Lewthwaite and Scanlan 1984:208). Research has found that a competitive sport could be perceived or interpreted to be a personally threatening experience; and consequently could create competitive stress. (Passer and Scanlan 1981:144). For some athletes participation in a sport became a negative rather than a positive endeavor. Recent evidence indicated that understanding competitive stress was one of the most important issues facing researchers and practitioners interested in sports. (Gould, Horn, and Spreemann 1983:160). This paper has dealt with the determinants of competitive stress and the impact of stress on an athletic performance.

PURPOSE OF THE STUDY

The purpose of this study was to give coaches a better understanding of what determined competitive stress in athletes and of the relationship of this anxiety to performance. This study examined research and studies pertaining to factors related to pregame and postgame competitive stress in athletes and the impact this stress had on the athletes' performance. It was also intended to investigate the validity and reliability of tests used to measure competitive anxiety in athletes.

ORGANIZATION OF THE STUDY

The annotations that follow were divided into three categories. There were overlapping areas in some of the research, but the main ideas were categorized into the area which seemed most appropriate. The first section dealt with factors or sources that determined pregame and postgame competitive stress in athletes. The second section focused on the effect of stress on an athletic performance. The third section briefly examined the validity of tests used to measure competitive anxiety.

LIMITATION OF THE STUDY

The limitation of this study was in the lack of research done on the topic. Results must be interpreted with caution because only limited amounts of research have been conducted on the topic of competitive stress. (Gould, Horn, and Spreemann 1983:60). Although thousands of youths were participating in competitive sports activities, little was known about how children perceived the competitive process, or how various interpersonal and situational factors

affected these perception. (Scanlan 1977:144). It was also clear that the scope of current research on competitive stress needed to be broadened considerably, and further work on the determinants and consequences of competitive performance were warranted. (Passer 1983:186). Investigators also stated most of the competitive stress research to date has focused on males, and little was known regarding stress in young female athletes. (Passer and Scanlan 1979:152).

GLOSSARY

Bem Sex Role Inventory (BSRI) - Used to classify a person as masculine or feminine based on endorsement of masculine or feminine personality characteristics. Instrument designed to measure the amount of masculine and feminine traits an individual possessed.

Competitive Stress - When a person perceived an imbalance between the demands of the competitive situation and his/her own performance capabilities under conditions where failure to meet the demands had important consequences to him/her. (Passer and Scanlan 1978:103).

Competitive State Anxiety Inventory (CSAI) - Measured changes in state anxiety prior to and after competitive events. This was a ten item short form of the State Anxiety Inventory (SAI).

Competitive Trait Anxiety (CTA) or A-Trait - A personality disposition reflecting the tendency to perceive competitive sport situations as threatening. (Passer 1983:172).

Inverted - U Curve - This concept implied that for optimal performance, each individual must attain an intermediate or moderate level of arousal.

Sport Competition Anxiety Test (SCAT) - A scale developed by Martens which measured competitive trait anxiety, and predicted state anxiety.

State Anxiety or A-State - A negative emotional response, feelings of apprehension, tension, and elevated autonomic nervous system arousal. (Lewthwaite and Scanlan 1984:209).

FACTORS RELATED TO PREGAME AND POSTGAME STRESS IN ATHLETES

Passer, Michael; Scanlan, Tara K. "Competitive Stress and the Youth Sport Experience." The Physical Educator 38 (Oct., 1981): 144-151.

Two hundred five eleven-and twelve-year-old boys who represented sixteen soccer teams in the American Youth Soccer Organization in California were tested for competitive stress. Stress reactions were assessed thirty minutes prior to a competitive game and immediately following the game in the form of questionnaires. These measured intrapersonal and situational factors related to the level of stress experienced before and after a competitive performance. The researchers found that whether or not competitive stress was actually experienced depended upon how the athlete perceived that he would respond to the performance demands in the upcoming competition, and how adequately the athlete perceived that he had met these performance demands after the game. When there was a discrepancy between the demand and the performance, stress occurred. However, stress does not occur in all children or competitive events.

Passer, Michael; Scanlan, Tara K. "Factors Related to Competitive Stress Among Male Youth Sport Participants." Medicine and Science in Sports 10.2 (1978): 103-108.

Through the study researchers determined various intrapersonal and situational factors related to pregame and postgame competitive stress in young male soccer players. The Sport Competition Anxiety Test (SCAT) was administered to measure competitive trait anxiety (CTA). The State Anxiety Inventory for Children (SAIC) along with a questionnaire was given both thirty minutes prior to competition and immediately following the game to assess state anxiety and various factors contributing to pregame and postgame stress. Results showed intrapersonal factors associated with pregame stress were: high CTA, low self-esteem, high state anxiety, and low performance expectations of team and self. The highly significant situational factor in prediciting postgame stress was winning or losing the game. Other factors that predicted postgame stress were the amount of fun experienced, game closeness, and the perceived importance of a game win to the coach. These intrapersonal and situational factors accounted for forty two percent of pregame stress and sixty percent of the variance of postgame competitive stress.

Lewthwaite, Rebecca; Scanlan, Tara K. "Social Psychological Aspects of Competition for Male Youth Sport Participants: 1. Predictors of Competitive Stress." Journal of Sport Psychology 6 (1984): 208-226

The study identified intrapersonal and situational factors associated with pregame and postgame stress experienced by nine to fourteen year old wrestlers. It also explored two new stress related factors: parental pressure to wrestle, and worries about adult expections and social evaluation, as they related to competitive stress. The Competitive State Anxiety Inventory (CSAI) was used to measure stress immediately before and after two consecutive tournament matches. The researchers noted the most influential and stable predictors of prematch stress in both matches were competitive trait anxiety and personal performance expectancies, whereas win-loss and the amount of fun experienced while wrestling were predictors of postgame stress for both matches. The two new stress factors were associated with prematch stress in the athletes. Investigators also concluded that postmatch stress in round one was predictive of postmatch stress in round two. These findings showed some consistency of response to stress and indicated that although win-loss was a dominant source of postmatch stress, virtually none of its effect carried over to the next contest.

Passer, Michael; Scanlan, Tara K. "Sources of Competitive Stress in Young Female Athletes." Journal of Sport Psychology 1 (1979): 151-159.

Researchers examined young female athletes to see if high competitive trait anxiety (CTA) players would display greater stress prior to a competitive game than low CTA players, and if losers would show greater postgame stress than winners. The study also looked at various intrapersonal and situational factors that were related to competitive stress in female athletes prior to and after competition. The State Anxiety Inventory for Children (SAIC) was given thirty minutes prior to and immediately following competition to assess state anxiety. A questionnaire was also administered to assess various pregame and postgame intrapersonal and situational stress factors. Results concluded that high CTA athletes evidenced greater stress prior to competition than did the low CTA players. Furthermore, the investigators noted pregame stress was also related to low self-esteem, high state anxiety, and team performance expectancies. The most powerful predictor of postgame stress was the game outcome (win/loss) with losers displaying greater postgame stress than winners. It was further noted, win or lose, players who experienced less fun during a game experienced greater stress than those players who had more fun. Thus, we note a relationship between fun and competitive stress.

Armstrong, M.R.; Dowthwaite, P.K. "An Investigation into The Anxiety Levels of Soccer Players." International Journal of Sport Psychology 15 (1984): 149-159.

The major purpose of the study was to determine the effect of a competitive game on the anxiety levels of soccer players. The Sport Competition Anxiety Test (SCAT) and the Competitive Short Form of the State Anxiety Inventory (CSAI) was given to eleven members of a collegiate soccer team ten minutes prior to each game and immediately after each game. By studying these subjects the investigators found that the result of the game affected A-state levels. Winning caused lower A-state levels than losing, which increased the A-state levels. The importance of the game also affected A-state levels of the soccer players. The more importance attached to a game, the greater the A-state level of the athlete.

Scanlan, Tara. "The Effects of Success-Failure on the Perception of Threat in a Competitive Situation." Research Quarterly 48.1 (March 1977): 144-153.

This study examined high-and low-trait-anxious fifth and sixth grade boys to investigate what effects success-failure had on the perception of threat to self, and how this threat was dealt with in terms of self-protective behavior. By using manipulation of win percentages, these subjects were divided into three groups which were success, moderate-success, and failure. Perceived threat was measured in terms of state anxiety, and self-protective behavior was determined by causal attribution, opponent preference, and social comparison. The findings determined that success-failure does affect A-state levels in a competitive situation. The A-state scores of the failure group were the highest, while the success group had the lowest scores. The results of this study also indicated that all three groups preferred to compete against opponents of equal ability and wanted a model of high absolute ability to watch them perform the competitive task. However, the failure group did not want to be recognized on a social list as did the success group. Finally the researchers noted that the success group attributed their outcome to external sources, while the other two groups attributed their outcomes to internal sources.

Cooley, Eric J. "Situational and Trait Determinants of Competitive State Anxiety." Perceptual and Motor Skills 64 (1987): 767-773.

Thirty-four men and nineteen women playing in a weekend tennis tournament participated in this study. The primary goal of the research was to determine if situational and trait factors were predictors of state anxiety. Measurements of state anxiety and information regarding situational factors were taken before the match. A postmatch questionnaire was given upon completion of the match. A follow-up questionnaire, including the Sport Competition Anxiety Test (SCAT) and the Trait Anxiety Subtest of the State-Trait Anxiety Inventory (STAI), was mailed to each subject six weeks after the tournament. The results pointed to competitive trait anxiety as a more powerful predictor of state anxiety than one specific situational factor. Furthermore, the only situational variable related to state anxiety was the perceived chance of winning. Thus, perceived success-failure was an influential predictor of state anxiety.

Gould, Daniel; Horn, Thelma; Spreemann, Janie. "Sources of Stress in Junior Elite Wrestlers." Journal of Sport Psychology 5 (1983): 159-171.

A questionnaire divided into four sections was given to participants of the Junior National Greco Roman and Freestyle Championships. The purpose of this questionnaire was to assess anxiety and identify sources of stress experienced by these wrestlers. Thirty-three sources of stress were revealed, with the major sources of stress being: performing up to one's ability, not wrestling well, participation in championship meet, and losing. Other sources of stress included: not making weight, making mistakes, and not being mentally prepared. However, it was worth noting that no one source of stress was experienced by all the athletes, indicating that individual differences do exist. The least sources of stress were: being outcoached, hurting my opponent, and fans getting on my case. These sources of stress were then factor analyzed into three dimensions: fear of failure, external control, and social evaluation. It was further noted that the wrestlers' trait anxiety and past experience in wrestling were two key predictors of these stress dimensions.

Passer, Michael. "Fear of Failure, Fear of Evaluation, Perceived Competence, and Self-Esteem in Competitive-Trait-Anxious Children." Journal of Sport Psychology 5 (1983): 172-188.

The present study focused on the relationships between competitive trait anxiety (CTA) and fear of failure, fear of evaluation, perceived competence, and self-esteem. CTA levels in male youth soccer players were obtained at the start of the season by using the Sport Competition Anxiety Test (SCAT). A series of questionnaires measuring performance expectancies and worries, expectations of criticism for failure, and self-esteem were given during a practice season to both high and low CTA children. This research found that high CTA subjects expected their personal performance in a game to be low and inadequate. Furthermore, high-anxious children felt poor performance would elicit more criticism from parents and coaches than did low CTA children. High CTA players, by not playing well, felt they would experience greater shame and be more upset than their less anxious counterparts. The study also noted high CTA subjects worried more about not playing well, losing, and being evaluated by parents and coaches. Thus, these findings indicated that fear of failure and evaluation were key sources of threat in CTA children.

Brustad, Robert; Weiss, Maureen R. "Competence Perceptions and Sources of Worry in High, Medium, and Low Competitive Trait-Anxious Young Athletes." Journal of Sport Psychology 9 (1987): 97-105.

This study sought to extend the research of Passer within the framework of Harter's theory of competence motivation, which maintained that anxiety in sports was related to feelings of self worth, personal ability, and control over outcomes. Investigators wanted to see if athletes who manifested high levels of competitive trait anxiety (CTA) also exhibited low levels of perceived physical competence, personal control, and self-esteem; a greater concern for negative evaluation from parents, coaches, and teammates; had frequent performance-related worries. CTA levels were obtained from nine to thirteen year old male and female softball and baseball players by using the Sport Competition Anxiety Test (SCAT). The subjects were classified into high, medium, and low CTA groups. Seven measures were used to assess physical competence, perceived control, evaluative and performance worry, and self-esteem. Researchers noted for boys a link between high levels of CTA and low levels of self-esteem, and a greater frequency of performance related worries; however, these subjects did not express a greater frequency of worry about evaluation by others. On the other hand, for the girls, no significant relationships emerged between CTA levels and perceptions of self or frequency of worry.

Cunningham, Herb; Rainey, David W. "Competitive Trait Anxiety in Male and Female College Athletes." Research Quarterly For Exercise and Sport 59.3 (1988): 244-247.

The purpose of this study was to see if competitive trait anxiety (CTA) would be related to fear of failure and evaluation, and to see if there would be a positive relationship between CTA and how much athletes valued success in sports. The study investigated possible gender differences in CTA among college athletes. Sixty-four male and sixty-four female athletes from an NCAA Division III university participated in the study. Each athlete was given a Passer eighteen item questionnaire and the Sport Competition Anxiety Test (SCAT) at the end of the fall semester. The athletes' responses to the questionnaire were factor analyzed, and those scales were entered into a regression analysis of SCAT scores. In male athletes, expectancy of criticism and performance worries were predictors of CTA, whereas the sole predictor for female athletes was performance worries. Males were worried about making mistakes and were concerned about teammates, coaches, and parents yelling at them for a poor performance; whereas females valued success in sports. The researchers concluded that fear of failure, evaluation, and the importance of success in sports were related to CTA. The researchers also noted that the pattern of these relationships to CTA varied according to gender.

Andersen, Mark B.; Williams, Jean M. "Gender Role and Sport Competition Anxiety: A Re-examination." Research Quarterly For Exercise and Sport 58.1 (1987): 52-56.

Since many of the traits associated with sports were considered masculine, females who participated in athletic events may have experienced more anxiety than their male counterparts. Two hundred sixteen males and females from the University of Arizona completed the Bem Sex Role Inventory (BSRI) and were classified into the following categories: masculine females, feminine females, androgynous females, masculine males, feminine males, and androgynous males. Anxiety levels were obtained in each individual by the Sport Competition Anxiety Test (SCAT). The evidence showed that feminine females exhibited a higher level of trait anxiety about competition than all the other groups; and androgynous females experienced more anxiety than masculine males. The results further showed no significant differences between the cross sex-typed individuals. Therefore, feminine female athletes can expect to experience high levels of anxiety while competing in the sports realm.

Ikponmwosa, Owie. "Influence of Sex-Role Standards in Sport Competition Anxiety." International Journal of Sport Psychology 12 (1981): 289-292.

The relationship between sex-role and anxiety in competitive sports was examined. The Bem Sex-Role Inventory (BSRI) was used to classify the subjects as masculine or feminine. The Sport Competition Anxiety Test (SCAT) was given to each subject. Results showed the mean SCAT score for males with masculine characteristics was significantly lower than the female subjects. Thus, evidence showed males to be less susceptible to sport competition anxiety than females.

Wark, Katherine K.; Wittig, Arno F. "Sex Role and Sport Competition Anxiety." Journal of Sport Psychology 1 (1979): 248-250.

The purpose of this study was to find out if males would show lower levels of CTA than females. Thirty-two males and thirty-nine females at a midwestern university served as subjects for this research. The Sport Competition Anxiety Test (SCAT) was administered to these subjects to measure competitive trait anxiety (CTA). Results showed that males were less anxious about sport competition than females.

Wittig, Arno F. "Sport Competition Anxiety and Sex Roles." Sex Roles 10.5 (March 1984): 469-473.

Subjects were classified into five categories by using the Bem Sex Role Inventory (BSRI). Martens' Sport Competition Anxiety Test (SCAT) was then used to measure CTA in these four hundred and thirty-nine subjects. Findings indicated that masculine males and females were less anxious about competition than feminine males and females. Thus, these results suggested that sports can be viewed more as a masculine endeavor.

Smith, Theresa. "Competition Trait Anxiety in Youth Sport: Differences According to Age, Sex, Race, and Playing Status." Perceptual and Motor Skills 57 (1983): 1235-1238.

This study investigated the relationship of competitive trait anxiety to age, sex, race, and playing status of the competitor. Eighty boys and seventy-nine girls, ten to thirteen years old and participating in various team sports, were examined. The Sport Competition Anxiety Test (SCAT) for children was administered prior to practice sessions and before and after the fourth game of an eight game season. The evidence found no differences in anxiety for age, sex, and race. This indicated that athletes perceived competitive stress much the same way. However, playing status affected the level of stress the athletes experienced. All-star athletes had significantly lower anxiety scores than playing substitutes.

IMPACT OF COMPETITIVE STRESS ON PERFORMANCE

Jenkins, Jack O.; Williams, Deborah A. "Role of Competitive Anxiety in the Performance of Black College Basketball Players." Perceptual and Motor Skills 63 (1986): 847-853.

Researchers in this study wanted to determine if high anxiety levels in athletes were detrimental to their performance in athletic contests. Competitive state anxiety was assessed in eight male university basketball players the evening prior to each of ten home games. Game performance of each athlete was measured by the coach and his assistants at the conclusion of each of the ten contests. The results were calculated and the conclusion was that as the level of competitive state anxiety increased in the basketball players, the level of performance decreased. Thus, high levels of state anxiety experienced by athletes in competition had a negative effect upon their performance.

Bernardo, Pasquale; Sonstroem, Robert J. "Intraindividual Pregame State Anxiety and Basketball Performance: A Re-examination of the Inverted-U Curve." Journal of Sport Psychology 4 (1982): 235-245.

Researchers wanted to test the inverted-U curve hypothesis, which dealt with the arousal-performance relationship in athletes. Thirty female varsity basketball starters from six teams were tested before three games of a tournament to obtain pregame, A-state, and A-trait levels. Game performance was measured for each individual by their total points scored, shot percentage, rebounds, steals, assists, personal fouls, and turnovers. Instead of grouping the data, it was done on an individualized basis. The data found that individuals had their best performances when they had low to moderate state anxiety levels. However, when these state anxiety levels were high, poor performance resulted. This evidence was especially true for the high A-trait group. Thus, the results indicated positive support for the inverted-U curve hypothesis.

Genuchi, Marvin; Weinberg, Robert S. "Relationship Between Competitive Trait Anxiety, State Anxiety, and Golf Performance: A Field Study." Journal of Sport Psychology 2 (1980): 148-154.

This particular study was designed to focus on the relationship of competitive trait anxiety, state anxiety and golf performance. Correlational procedures were also employed to determine the relationship between SCAT and state anxiety. The subjects used in the study were sixty-three male intercollegiate golfers who participated in a tournament in Texas. The Sport Competition Anxiety Test (SCAT) was administered to obtain thirty golfers who had high, moderate, and low levels of competitive trait anxiety (CTA) from this group of sixty-three. A state anxiety test was then given to those thirty subjects on the first day of competition and on the last day of competition. The results indicated that low CTA golfers displayed higher levels of performance than moderate or high CTA golfers. Low levels of anxiety enhanced golf performance, and high levels of anxiety were detrimental. Thus, the researchers noted that sports requiring fine muscle coordination and precision were performed best at low levels of anxiety. This study also provided further proof that SCAT was a good predictor of pre-competitive state anxiety.

Avener, M.; Mahoney, M.J. "Psychology of the Elite Athlete: An Exploratory Study." Cognitive Therapy and Research 1 (1977): 135-141.

A field situation was employed to study anxiety patterns of twelve gymnasts competing for berths on the 1976 U.S. Men's Olympic Gymnastics Team. A psychological skills inventory was completed forty-eight hours before the qualifying meet, and a ten point Likert scale was given to each of the gymnasts. Findings indicated significant differences in the anxiety patterns between gymnasts who made the team and those who did not make the team. The successful gymnasts had higher levels of anxiety before the competition began, but during the actual performance the level of anxiety decreased. The results further found the successful gymnasts to be more self-confident, dreaming of gymnastic success, and thinking about gymnastics more than the unsuccessful gymnasts.

Cooke, C.J.; Cullen, J.; Lilies, L.; Meyers, A.W. "Psychological Aspects of Athletic Competitors: A Replication Across Sports." Cognitive Therapy and Research 3 (1979): 361-366.

Researchers examined the anxiety patterns of nine elite racquetball players and noted differences in the anxiety patterns of the skilled players (national champions) and the less skilled players (collegiate players). The results showed that athletes in both groups were equally anxious prior to competition. However, as the competition began, the more skilled players showed a steady decrease in anxiety. Furthermore, the less skilled athletes showed higher anxiety levels during competition than the skilled performers. The better performers also displayed more self-confidence and less self-doubt than did their counterparts.

Gould, Daniel; Horn, Thelma; Spreemann, Janie. "Competitive Anxiety in Junior Elite Wrestlers." Journal of Sport Psychology 5 (1983): 58-71.

Pre-competitive and competitive anxiety patterns were studied in elite wrestlers. These anxiety patterns were studied in relationship to experience, age, and success of the wrestler. Wrestlers, between the ages of thirteen and nineteen, taking part in the U.S. Junior National Championships were chosen as subjects. In order to assess anxiety a questionnaire comprised of four separate sections was administered to each individual wrestler forty-eight hours before the competition began. No significant differences were found between successful or less successful, and more or less experienced wrestlers in pre-competitive and competitive anxiety patterns. Furthermore, differences in anxiety patterns were not related to the age of the athlete. However, there were differences in anxiety patterns between high and low trait anxious wrestlers. The questionnaire revealed that the entire sample of wrestlers became worried or nervous in sixty-six percent of their matches. Only twelve percent felt this hurt their performance while eighty-eight percent felt it usually helped their performance.

Basler, Marilyn L.; Fisher, Craig; Mumford, Nancy. "Arousal and Anxiety Correlates of Gymnastic Performance." Research Quarterly 47.4 (December 1976): 586-589.

The effects of state and trait anxiety upon performance was the major emphasis of this research. Eighteen females from the varsity gymnastic team of Ithaca College were the subjects in this experiment. A-trait and A-state scores of each gymnast were established in three different meets ten minutes prior to competition. These anxiety scores were correlated with the performance scores of the judges. No significant differences between anxiety and performance were found in the correlation coefficients.

Gill, Diane L.; Martens, Rainer; Scanlan, Tara K. "Competitive Trait Anxiety, Success-Failure and Sex as Determinants of Motor Performance." Perceptual and Motor Skills 43 (1976): 1199-1208.

This research examined the affects of competitive trait anxiety (CTA) and success failure on the performance and A-state levels of young competitors. The subjects who took part in this study were fifth and sixth grade boys. CTA was assessed by Sport Competition Anxiety Test (SCAT) and state anxiety levels were measured by State Anxiety Inventory (SAI). The researchers found high CTA subjects had higher A-state levels than their low CTA counterparts. It was further noted that failure increased A-state levels and success decreased them. However, neither CTA nor success-failure affected the motor performance of the subjects.

Poteet, Don; Weinberg, Robert. "Competition Trait Anxiety, State Anxiety, and Performance." Perceptual and Motor Skills 50 (1980): 651-654.

The purpose of this study was to see if competitors with high competitive trait anxiety (CTA) also exhibited higher levels of state anxiety during a performance. The subjects chosen for this investigation were thirty males who ranged in age from eighteen to twenty-two years. The Sport Competition Anxiety Test (SCAT) and the State Anxiety Inventory (SAI) were administered to the subjects. The results showed that competitors with a high CTA level also exhibited higher levels of state anxiety than competitors with low CTA levels. However, no significant differences in performance levels for high and low anxiety competitors were noted.

Gill, Diane L.; Karteroliotis, Constantine. "Temporal Changes in Psychological and Physiological Components of State Anxiety." Journal of Sport Psychology 9 (1987): 261-274.

State anxiety and its components (cognitive worry, somatic anxiety, and self-confidence) were examined by researchers to determine how they related to motor performance prior to and after competition. Anxiety levels were measured by the Competitive State Anxiety Inventory (CSAI), and heart rate and blood pressure were recorded in forty male subjects in a physical education class before and after the competitive event. The results found that somatic anxiety and cognitive worry increased significantly between pre-and midcompetition, and then decreased at postcompetition. However, the physiological responses increased from baseline to precompetition and continued to increase in mid-and postcompetition. Thus, the researchers concluded that psychological and physiological measures were not significantly correlated to one another. The relationship between the components of state anxiety and performance were also nonsignificant. Therefore, this study found A-state had little influence on performance.

Gould, Daniel; Weinberg, Robert; Weiss, Maureen. "Psychological Characteristics of Successful and Nonsuccessful Big Ten Wrestlers." Journal of Sport Psychology 3 (1981): 69-81.

Forty-nine wrestlers, competing in the Big Ten championship tournament at Michigan State University, were given a psychological preparation questionnaire to complete the night before competition. The researchers examined the differences in psychological skills in those wrestlers who placed and those who did not place. It was found that successful wrestlers had more self-confidence, and focused their attention more on wrestling thoughts. However, this study found no significant differences in anxiety levels between the successful and non successful wrestlers.

VALIDITY OF TESTS MEASURING COMPETITIVE ANXIETY

Gill, Diane L.; Martens, Rainer. "State Anxiety Among Successful and Unsuccessful Competitors who Differ in Competitive Trait Anxiety." The Research Quarterly 47.4 (1976): 698-707.

The primary purpose of this study was to investigate the validity of the Sport Competition Anxiety Test (SCAT) developed by Martens. Researchers wanted to find out if persons who scored high on SCAT had higher levels of A-state in competitive situations than persons who scored low on SCAT. A secondary purpose was to determine if competition outcomes (success-failure) affected A-state levels before, midway, and after competition. The SCAT and the State Anxiety Inventory for Children (SAIC) was administered to four hundred ninety fifth and sixth-grade males and females before, during and after competition. The results found that persons scoring high on SCAT did indeed exhibit higher levels of A-state just prior to competition than did low SCAT persons. Furthermore, SCAT was a significant predictor of A-state levels at midcompetition, thus providing clear support for the construct validity of SCAT. The researchers noted that persons who were highly successful (eighty percent of games won) maintained low levels of A-state throughout competition, whereas those persons winning only twenty percent of their games had high A-state levels during the course of competition. Furthermore, boys displayed higher A-state levels in these groups than their female counterparts. Therefore, success-failure in competition was a significant predictor of A-state levels.

Deshaies, P.; Gerson, R. "Competitive Trait Anxiety and Performance as Predictors of Pre-Competitive State Anxiety." International Journal of Sport Psychology 9 (1978): 16-27.

Researchers wanted to determine if the Sport Competition Anxiety Test (SCAT) was a viable instrument for measuring competitive trait anxiety (CTA) and predicitng pre-competitive state anxiety in athletes. The subjects used for the study were female varsity intercollegiate softball players participating in a National Softball tournament at Florida State University. SCAT and a state anxiety test were administered thirty minutes prior to game time on the second day of tournament play. The state anxiety test was given first, then the SCAT test. The tests were given in this order because the state instrument could have been influenced if SCAT had been administered first, making the tests inaccurate. The results concluded that SCAT was a significant predictor of pre-competitive state anxiety and a good instrument to measure CTA in sport participants. Therefore, the evidence supported the validity and reliability of SCAT when predicting state anxiety and measuring CTA.

Martens, Rainer; Simon, Julie A. "Comparison of Three Predictors of State Anxiety in Competitive Situations." Research Quarterly 47.3 (1976): 381-386.

The purpose of this study was to see which measure of competitive A-trait (SCAT, coaches rating scale, Spielberger's A-trait inventory) could best predict pre-competitive A-state in athletes. Women basketball players from nine Illinois high schools served as subjects. In after-school sessions, the players completed SCAT, A-trait Inventory, and A-state Inventory, and the coaches' rating scales were administered at the end of the season. Pre-competitive A-state measures were also taken ten minutes prior to a regular season basketball game. All analyses were correlated and the findings indicated that SCAT was a better predictor of pre-competitive A-state than the other two A-trait measures. Spielberger's A-trait inventory was the next best predictor of A-state with the coaches' ratings found to be unreliable.

Beauchamp, Diane; Gruber, Joseph J. "Relevency at the Competitive State Anxiety Inventory in a Sport Environment." Research Quarterly 50.2 (1979): 207-214.

The Competitive State Anxiety Inventory (CSAI) was tested to determine if it could detect changes in A-states due to stress and if it could be consistent in its predictions each time it was used. Twelve collegiate women varsity basketball players completed the inventory before and after two practice sessions to obtain a baseline for CSAI, before and after three easy games (won by twenty one points), and before and after three crucial games (lost by a few points). The data revealed that CSAI could detect changes in anxiety states before and after competition. It found state anxiety was reduced after all games that were won, but anxiety remained high after the defeats. Furthermore, the basketball players were more anxious before crucial games than before easy ones. Thus, it was concluded that CSAI was a relevant test to use in the sports realm.

SUMMARY

Research has found that not all athletes experienced competitive stress in athletics. Whether or not competitive stress was actually experienced depended upon how adequately the athlete believed he/she could respond to the performance demands of a pending competition, and how adequate the athlete believed his/her actual response was in meeting the performance demands of the recent competition. (Passer and Scanlan 1981:148). These authors further noted various interpersonal and situational factors related to pregame and postgame stress in athletes.

Pregame stress was related to the athlete's competitive trait anxiety level (CTA), self-esteem, state anxiety, performance expectations of self and team, parental pressure, and worries about both adult expectations and social evaluation. (Passer and Scanlan, 1978: 107, 1979: 157, Lewthwaite and Scanlan 1984:224). Specifically, lower levels of self-esteem, higher state anxiety, lower personal and team expectations, and high CTA levels were associated with higher pregame stress levels in athletes. Researchers further noted that athletes who had high levels of CTA expected their performance in a game to be poor and inadequate. These athletes believed they would elicit more criticism from parents and coaches. It appeared that the cognitive component of CTA included not only performance related worry, but worry about evaluation as well. (Passer 1983:185). According to further studies, predictors of CTA in male athletes were expectancy of criticism and performance worries, whereas the sole predictor for female athletes was performance worries. (Cunningham and Rainey 1988:246). Males were worried about making mistakes and were concerned about teammates, coaches, and parents yelling at them for a poor

performance. Females valued success in sports. Several researchers noted that masculine males had lower levels of CTA then feminine females. Males who endorsed a masculine sex role were less anxious regarding sports competition than females who endorsed a feminine sex role. (Wark and Wittig 1979:249). However, another researcher found no significant differences in CTA for sex, age, or race, but indicated that playing status affected CTA levels of athletes. (Smith 1983:1237).

The most powerful predictor of postgame stress was the game outcome (win/loss) with losers displaying greater postgame stress than winners. (Passer and Scanlan 1979:156). Investigators found that the importance of the game affected A-state levels of athletes. The more importance which was attached to a game, the greater the A-state level of the athlete. (Armstrong and Dowthwaite 1984:153). Other factors associated with postgame stress were game closeness and the amount of fun experienced during a game. Win or lose, players who experienced less fun during a game experienced greater stress than those players who had more fun. (Passer and Scanlan 1979:158). Fun and competitive stress were related and it appeared that fun might be a variable which could reduce some of the impact of the potent success-failure factor. (Passer and Scanlan 1978:107).

The relationship of anxiety and performance was then studied. Several studies found that athletes who exhibited high levels of CTA and state anxiety had poor performances. The high levels of anxiety experienced by athletes in competition had a negative effect upon their performance. (Jenkins and Williams 1986:852). One study noted that low levels of anxiety enhanced performance in sports requiring fine muscle coordination and precision.

High levels of anxiety were detrimental. (Genuchi and Weinberg 1980:153). Studies that dealt with elite athletes found that they experienced high levels of anxiety prior to competition, but those levels decreased during the actual performance. These researchers noted that the successful athlete had more self-confidence and dreamed and thought about success more than the unsuccessful athlete. (Avener and Mahoney 1977:140, Cooke et al. 1979:365).

In contrast to the above studies, several researchers found no significant differences between anxiety patterns and performance. Given the evidence at hand, arousal was not a strong determinant of performance. (Gill, Martens, and Scanlan 1976:1207). The relationship between pre-competitive cognitive worry and performance were not very strong, and A-state levels had little influence on performance. (Gill and Kateroliotis 1987:272).

The Sport Competition Anxiety Test (SCAT) and the Competitive State Anxiety Inventory (CSAI) were used in many of the studies to measure and assess anxiety. Researchers found SCAT to be a valid and reliable instrument when measuring CTA levels and predicting A-state levels in athletes. (Deshaies and Gerson 1978:24). The CSAI was a good detector of changes in A-State before and after competition, and was suitable for repeated use in a competitive sport environment. (Beauchamp and Gruber 1979:213).

CONCLUSIONS

Some participants involved in organized athletic events have experienced competitive stress. Every individual who competed in sport was not placed under severe stress, rather stress was a problem for certain individuals in certain situations. (Gould, Horn, and Spreemann 1983:70). Researchers found various interpersonal and situational factors caused athletes to experience stress prior to competition or after competition. Further efforts to identify the specific intrapersonal perceptions and experiences that disposed certain athletes to perceive sports competition as potentially threatening to self may have provided important initial steps in developing approaches designed to enhance the enjoyment of the competitive stressed athletes in sports. (Brustad and Weiss 1987:104). Once the nature of competitive stress was understood and the factors that induced it were identified, ways in which to reduce stress could be determined to maximize the positive aspects of the competitive experience. (Passer and Scanlan 1978:107).

The research that pertained to the effect of anxiety on sports performance was divided, and produced conflicting results. Part of the researchers believed that anxiety levels had a significant effect on the athlete's sports performance. Athletes achieved their best performances during low and moderate anxiety levels. (Bernardo and Sonstroem 1982:242). Other researchers found no significant differences concerning anxiety levels and sports performance. It was difficult at best, to locate any level of arousal on the continuum and label it as optimum for motor performance. (Basler, Fisher, and Mumford 1976:589). Even though these researchers produced different results the Sport Competition Anxiety Test (SCAT)

and the Competitive State Anxiety Inventory (CSAI) were viable instruments to use when measuring and detecting changes in anxiety levels.

RECOMMENDATIONS

It was recommended that:

1. Little emphasis should be put on winning the game. Punitive measures should not be employed when a game was lost.
2. Athletes should be encouraged to have fun while participating in sports.
3. Coaches should help athletes understand their strengths and limitations.
4. Parents and coaches should not yell or downgrade athletes for poor performances, but rather should provide constructive instruction to help them improve performances.
5. A person should not be pressured to compete.

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